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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Marc-Andre Theoleyre

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EXAMINER

DEES, NIKKI H

ART UNIT

PAPER NUMBER

1781

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/526,827	Applicant(s) THEOLEYRE, MARC-ANDRE	
	Examiner Nikki H. Dees	Art Unit 1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 18, 2010, has been entered.
2. Claims 1 and 3-20 are currently pending in the Application.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 15-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claims 15-20 claim the method

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"consisting essentially of" the claimed steps. There is no support in the instant specification for the method to be limited to only the claimed steps. At p.3 lines 19-20 it is taught that the inventive method "comprises the operations." Further, the example where a sweet whey is treated by the anionic resin followed by the cationic resin is not considered sufficient support as the instant claims are to a decalcification method for whey and whey permeate.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noel (6,383,540) in view of Saska et al. (5,443,650).

7. Noel teaches a method for the demineralization of whey. The method comprises exchanging divalent cations for protons and divalent anions for chloride ions (Claim 1). A strong anionic resin is employed to exchange the anions able to form complexes with the monovalent anions (claim 3), and a strong cationic resin is used to exchange cations (claim 4).

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8. Noel discloses regeneration of the mixed (cationic and anionic) bed resin, followed by the regeneration of the cationic bed resin using the effluent from the mixed bed (col. 5 lines 16-21).

9. Noel et al. are silent as to the use of an aqueous NaCl solution for the regeneration of the ion exchange resins.

10. Selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have altered the order of the ion exchange resins in order that the solution contact the anion exchange resin prior to contacting the cation exchange resin.

11. Saska et al. teach a method for removing Ca^{2+} and Mg^{2+} from an aqueous sugar solution on a cation exchange resin where the divalent cations are replaced by the monovalent cations Na^+ and K^+ . The cation exchange resin is periodically regenerated using an aqueous NaCl solution (col. 1 lines 33-37).

12. As to the regeneration of the ion-exchange resins, as with the order of performing the ion exchange steps, selection of any order of regeneration would be *prima facie* obvious over the method taught by Noel. Selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have altered the

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order of the ion exchange resins in order that the solution contact the anion exchange resin prior to contacting the cation exchange resin.

13. Regeneration of ion exchange columns using NaCl is known in the art, as taught by Saska. Therefore, it would have been obvious to one skilled in the art to carry out a well known step in a known process for its intended purpose to provide the predictable result of a regenerated column.

14. Both the method taught by Noel and the method taught by Saska are for use with aqueous solutions of food products. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have exchanged cations as taught by Saska et al. in the method taught by Noel in order demineralize the aqueous solution without excessively increasing the acidity of the solution.

15. There are a multitude of commercially available anionic and cationic exchange resins. It would have been well within the ability of one of ordinary skill in the art at the time the invention was made to have selected the appropriate cationic and anionic exchange resins in order to be able to both effectively remove the desired ions from the solution and regenerate the resins with an aqueous sodium chloride solution.

Response to Arguments

16. Applicant's arguments filed May 18, 2010, have been fully considered but they are not persuasive.

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17. Applicant argues that the divalent anions are not removed in the mixed bed resin of Noel (Remarks, p. 8).

18. This argument is not persuasive. The claims do not required that divalent anions be removed in the anionic resin, only that the anions be replaced with monovalent anions, as they are in Noel.

19. Applicant argues that the process of Noel requires several steps (Remarks, p. 8).

20. This argument is not persuasive as the instant method comprises the claimed steps. Therefore, steps occurring before and after the claimed steps are not excluded from the method.

21. Applicant argues that Saska is related to the sugar juice industry and one in the whey industry would not look to the sugar industry (Remarks, pp. 9-10).

22. In response to applicant's argument that Saska is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention.

See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Noel and Saska pertain to ion exchange treatment of foodstuffs. Therefore, one looking to the art for resin regeneration methods would not have limited themselves to only resins used for the treatment of whey products. Further, ion exchange is old and well-known technology, and one of ordinary skill would have been able to look across at virtually any ion exchange application to help determine the best method for regeneration of the resins.

23. Applicant argues that the treatment of Noel would not have led to the decomplexation of divalent cations and divalent anions (Remarks, p. 11).

24. This argument is not persuasive. Noel teaches that “mainly” sulfate anions are exchange for chloride ions on the column (col. 3 lines 63-65). This does not preclude the decomplexation of the divalent cations and divalent anions. It is also noted that divalent anions are exchanged on the cation exchange resin, indicating that there may also be divalent anions available for exchange.

25. Regarding the previously presented declaration (Remarks, pp. 12-13), it remains that Applicant has not shown criticality of the order of performing the ion exchange process with the anionic resin followed by the cationic resin when compared with the mixed bed resin. Applicant’s specification speaks to, and the originally filed claims are to, the ion exchange processes being performed simultaneously (i.e. mixed bed) or anionic resin followed by cationic resin. As the prior art teaches the mixed bed resin, Applicant has not presented convincing arguments or evidence as to distinguish the claimed order from the teachings of the prior art. Applicant's declaration filed July 28, 2009, compared three treatments (AF-CF, CF only, and CF-CF) but did not compare the operations being performed simultaneously with AF-CF.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Houldsworth (Houldsworth, D.W. 1980. "Demineralization of

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whey by means of ion exchange and electrodialysis." J. Soc. Dairy Tech. Vol. 33. pp. 45-51) teaches ion-exchange for whey demineralization. The order of ion exchange taught is cation exchanger followed by anion exchanger. Shimatani et al. (5,118,516) teach mixed bed strong anionic and strong cationic resins for ion exchange of whey permeate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikki H. Dees whose telephone number is (571)270-3435. The examiner can normally be reached on Monday-Thursday 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nikki H. Dees/

Nikki H. Dees
Examiner
Art Unit 1781